

### Abstract of the Disclosure

Membrane modules that contain one or more hydrogen-selective membranes, methods for preparing the same, and hydrogen purification systems, fuel processors and devices containing the same. In some embodiments, the

5 membrane modules include one or more hydrogen-selective membranes supported on a support or screen structure, of which a variety of embodiments are disclosed. In some embodiments, the membrane or membranes are adhesively mounted on the screen structure during assembly. In some embodiments, the screen structure includes a plurality of screen members adhesively mounted together during

10 assembly. In some embodiments, the screen structure includes a coating. The present invention is also directed to methods for reducing the thickness of hydrogen-selective membranes.